

WHAT IS CLAIMED IS:

1. An elongated pile article, comprising:
an elongated support strand having a thermoplastic outer surface and having a width and a height;
a plurality of thermoplastic bulkable continuous filaments bonded to one circumferential region of the strand surface and along the length of said strand, said region defining a strand base, the filaments forming an elongated loosely entangled array of filaments extending outwardly from the strand in two spaced apart pile rows connected by a base region having a dense portion of filaments bonded together, the dense portion of the filaments being secured to said surface of the support strand at said base, the filaments in each row having a pile length measured from the strand of between 2.5 millimeters (0.1 inches) and 12.7 millimeters (0.5 inches);
said circumferential region along the length of said strand defining a base plane for said elongated pile article, and the pile filaments along a lower side for each row adjacent the base plane defining a lower filament plane for each row that is at an angular orientation within 10 degrees to said base plane, the angle having an origin in the base plane aligned with the width of the strand, and the filaments at the opposed upper side of each row defining an upper filament plane for each row that is at an angular orientation to said base plane of 45-90 degrees, to thereby contain the entangled array of filaments in said spaced apart rows such that said strand is accessible;
the pile article having a guide groove on one side of the strand and on an opposed side of the strand between the strand and the corresponding pile row thereby providing an elongated guide ridge formed by

the strand which is accessible between said spaced apart rows.

2. The pile article of claim 1, wherein said
5 strand comprises a support strand having an
uninterrupted outer surface, the strand permanently
drawable free of fracture up to 15% at a draw
temperature of 150 degrees C and a draw force of 9.0
newtons (2 pounds) or less at said draw temperature, to
10 thereby limit the draw force required to draw the pile
article; and wherein said pile article is arranged as a
preform for a pile surface moldable carpet, comprising:
said pile article arranged in closely
spaced rows of 6-10 pile articles per inch, and
15 attached to a thermoformable sheet having a thickness
of 0.4-5.0 mm (15-200 mils) with one surface covered
with a thermoplastic adhesive film to form a composite
backing, the pile article attached directly to the
film, where the base region of said pile article is
20 embedded into the composite backing to a depth of 0.13-
0.64 mm (5-25 mils).

3. A molded carpet module shaped in a three
dimensional non-planar contoured configuration for
25 forming an original carpeted floor of a motor vehicle
body assembly, wherein said carpet module comprises:
a pile article preform of claim 2 in which
the surface of the composite backing opposite the
tuftstrings is covered with a stretchable fabric
30 stabilizing layer which is embedded in the composite
backing.

4. The pile article of claim 1 arranged as a
pile surface structure, comprising:
35 said pile article arranged in first
parallel rows spaced apart at a pitch of less than 1.6

pile articles per centimeter (5 pile articles per inch) and oriented with the pile forming filaments arranged to create a pile surface spaced from the support strand;

5 said pile article arranged in second parallel rows crossing said first parallel rows at a pitch of less than 1.6 pile articles per centimeter (5 pile articles per inch), and attached to the pile articles arranged in the first parallel rows, the yarns
10 at the point of attachment to the strand being attached to the first parallel rows with the pile forming filaments of the pile articles in the second rows arranged to create a pile surface spaced from the support strand,

15 whereby a waffle pattern is produced at the pile surface by the pile of the pile articles and a plurality of wells formed adjacent the intersections between the first and second parallel rows.

20 5. An automotive pile surface structure, comprising:

 a backing substrate comprising a thermoplastic sound absorbing sheet having a density of at least 1.0 g/cc and a thickness of at least 0.4 mm
25 (15 mils);

 an adhesive surface on one surface of said substrate;

 a fabric stabilizing layer on the surface of said backing opposing said adhesive surface;

30 a plurality of pile articles, each comprising a support strand having bonded thereto a pile yarn comprising filaments of thermoplastic polymer, said yarn having a dense portion of filaments bonded together and secured to the surface of the
35 support strand at a base by fusion of the thermoplastic polymer of the support strand and the filaments;

the pile articles placed one next to the other and said base bonded to the adhesive surface of said backing substrate with the tufts extending away from the backing;

5 said base surface of the elongated pile article embedded below the adhesive surface of said backing substrate so that said adhesive surface engages pile yarns beyond said base surface.

10 6. In a tuftstring carpet assembly comprising a backing substrate and a pile article attached thereto, with each pile article comprising a support strand having attached thereto a plurality of pile forming yarns comprising multifilaments, the yarns at the point
15 of attachment to the strand being attached to the backing substrate and the pile forming filaments arranged to create a pile surface spaced from the
backing substrate, the improvement comprising:

 a monofilament yarn blended with the
20 multifilament yarn and attached to said support strand to create stiff bristle filaments distributed in the pile surface.

25 7. A method of forming a pile surface article preform, comprising the steps of:

 a) arranging a pile article to substantially cover a backing substrate, said pile article comprising a strand having attached thereto opposed rows of loosely entangled pile filaments, the
30 rows spaced apart making the strand accessible and the rows connected to each other and to the strand at a base;

 b) applying pressure to said strand between said rows to press said pile article against
35 said backing substrate, and

c) embedding the base of said pile article into said backing and causing said rows to rotate toward one another to reduce said space between the rows on the pile article.

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8. The method of claim 7, further comprising the step of:

d) applying heat to said pile filaments thereby bulking said filaments and substantially eliminating said space between rows.

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9. A method of forming a pile surface article preform, comprising the steps of:

a) holding a backing substrate on a cylindrical drum by applying a vacuum to the side of the backing contacting said drum;

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b) winding a pile article, comprising a strand and pile yarn attached at a base region of the pile article, spirally over the surface of the backing substrate so the pile yarn of the pile article substantially covers the backing substrate and;

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c) pressing the pile article strand against the backing substrate to embed the pile article base region in the backing to a depth of 0.13-0.64 mm (5-25 mils).

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10. In a method of forming a pile article by guiding support strands along guiding grooves on ridges positioned at the corners of a multi-sided mandrel, wrapping a pile yarn around the mandrel over the ridges and the strands guided thereon to form loops of yarn, transporting the loops and strands under a bonding means aligned with the support strands and bonding the yarn to the strands, the improvement comprising the steps of:

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a) providing additional guiding grooves on each side of the mandrel between the ridges on the mandrel and guiding additional support strands in the additional grooves;

5 b) bonding the yarn to the strands guided at the corners of the mandrel so that the corner strands positively transport the yarn attached thereto;

 c) bonding the yarn to the strands guided on the sides of the mandrel after said bonding at the
10 corners to attach the additional strands to the yarn;
and

 d) cutting said loop of yarn between the support strands to form a plurality of pile articles and forwarding the pile articles off the mandrel.